PEACE/WILLISTON
FISH & WILDLIFE
COMPENSATION
PROGRAM

BC hydro

BRITISH
COLUMBIA

Fish Habitat Enhancement Potential And Stocking Assessment of Sabai Lake

D. A. Jesson
1990

PWFWCP Report No. 115

105-02835/

The Peace/Williston Fish & Wildlife Compensation Program is a cooperative venture of BC Hydro and the provincial fish and wildlife management agencies, supported by funding from BC Hydro. The Program was established to enhance and protect fish and wildlife resources affected by the construction of the W.A.C. Bennett and Peace Canyon dams on the Peace River, and the subsequent creation of the Williston and Dinosaur Reservoirs.

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Website: *www.bchydro.bc.ca/environment/initiatives/pwcp/*

This report has been approved by the Peace/Williston Fish and Wildlife Compensation Program Fish Technical Committee.

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SABAI LAKE

WATERSHED:	PARSNIP RIVER
DATE OF SURVEY:	MAY 31, JUNE 1. and AUGUST 24. 1990
FIELD CREW LEADER:	D.A. JESSON
FIELD ASSISTANT:	A. MCLEAN
REPORT PREPARED BY:	D.A. JESSON

WILLISTON FISHERIES PROJECT

B. C. HYDRO

ENVIRONMENTAL RESOURCES

and

MINISTRY OF ENVIRONMENT

RECREATIONAL FISHERIES BRANCH

RELEASED BY: _____

D.H.G. Ableson, Regional Fisheries Biologist

Lake: **SABAI**

INTRODUCTION

Sabai Lake was initially surveyed by the Recreational Fisheries Branch, Prince George, during July, 1987. The survey consisted of a standard fisheries baseline reconnaissance. The report, A Reconnaissance Survey of Sabai Lake, is on file at the Ministry of Environment, Recreational Fisheries Branch office in Prince George.

The lake was selected by Williston Fisheries to be assessed for potential enhancement projects at the request of Regional Fisheries Branch personnel. The following are the results of May 31 - June 1, 1990 and August 24, 1990 investigations.

Enhancements are discussed in the section entitled, "Fisheries Management Comments".

METHODS

The identification and relative abundance of the fish species present in Sabai Lake was determined by setting one overnight sinking monofilament gillnet and two minnow traps. A single angler caught rainbow trout was sampled for fork length, weight, sex, maturity, and stomach contents. A scale sample was also collected for age determination. A second rainbow captured in the monofilament gillnet escaped before being boated. Burbot and coarse fish species (longnose and coarse suckers, redside shiners, peamouth chub, and prickly sculpin) had size range and total numbers data recorded.

The fisheries enhancement potential of the inlet and outlet was determined through visual observation and the recording of physical data. The inlet was also assessed visually during low flow on August 24, 1990.

Photo documentation of the inlet and outlet at the time of survey is included in this report.

Lake: **SABAI**

RESULTS

One overnight set produced one rainbow trout (which escaped before being boated), 13 suckers, and 7 redside shiners. In addition, one burbot and two prickly sculpins were captured in minnow traps. One angler caught rainbow was sampled.

The lake has one inlet and one outlet. The outlet is blocked at the lake by an old, overgrown beaver dam (80.0 m in length and 0.55 m in height). The outlet offers no spawning potential downstream of the dam, with one other dam located 150 m downstream. Additional beaver dams and associated ponds are believed to occur downstream from the second dam, however, no investigation took place. The two dams are an obstruction to upstream fish migration, limiting movement upstream from Tudyah Lake.

The inlet was investigated twice during the spring/summer period to determine if flow varied between seasons. On May 31, 1990, at 250 m upstream from the lake, the inlet had a wetted width of 0.9 m and average depth of 20 cm. Stream velocity at this point was measured at 0.14 m/sec and water temperature was 13°C. At the same location on August 24, 1990, the wetted width was 0.7 m and average depth was 16 cm. Water temperature was recorded at 8.5°C.

Lake: **SABAI**

FISHERIES MANAGEMENT COMMENTS

Sabai Lake is locally known as a poor producer of sports fish. This was verified in both the July, 1987 and June, 1990 netting programs. Both net sets combined to produce only one rainbow trout.

In view of the low number of sports fish (rainbow trout) present, it is recommended the lake be stocked with native rainbow trout and managed for a moderate use fishery, given its proximity to Mackenzie and the developed Forest Service recreation site on the lake. An initial spring stocking of 10,000 (10 gram) native rainbow trout is suggested. A stock assessment should be undertaken 3 years after the initial stocking. At that time, the success of the stocking program should be evaluated. Changes to numbers of fish stocked and stocking frequency may be required as a result of angler pressure and fish growth and survival.

Angling pressure information can be derived from Ministry of Forests visitor record forms for the Sabai Lake recreation site.

Oxygen and temperature data obtained during the 1987 survey indicated the lake is well oxygenated to a depth of 8.0 m. Although the probability of winterkill is low, late winter oxygen/temperature information is recommended.

During fisheries assessment of the inlet, it was noticed that very little salmonid spawning habitat was present. There is some rearing habitat with large organic debris and undercut banks providing cover. It appears there is sufficient water in the inlet during summer low flows. The spawning potential of the inlet can be improved through the introduction of gravel and some stream clearance.

Access to the inlet by land can be gained by building a trail from the existing Forest Service recreation site to the inlet. The small size of the inlet may not provide significant rainbow trout recruitment to the lake, but may act to eliminate any spawnbound condition resulting from a stocking program. Inlet improvement should only proceed once the success of the stocking program has been evaluated.

There is no enhancement potential in the outlet due to extensive beaver activity.

Lake: **SABAI**

NETTING RECORD

Mesh sizes experimental order: 25, 76, 51, 89, 38, 64 mm.

NETTING SITE #1

Type:	Sinking monofilament		
Date Set:	May 31, 1990	Time:	1500 hrs
Date Lifted:	June 1, 1990	Time:	1000 hrs
Net Dimensions:	Length: 91.4 m	Depth:	2.4 m
Shallow End Mesh Size:	25 mm	Depth:	2.0 m
		Substrate:	organics
Deep End Mesh Size:	64 mm	Depth:	11.5 m
		Substrate:	organics

Comments:

All fish caught were in the 25 mm panel. One rainbow trout escaped.

Lake: **SABAI**

LAKE CATCH SUMMARY

SPECIES	NET SITE NO.				ANGLED	OTHER	TOTAL	NUMBER SAMPLED	NUMBER PRESERVED	SIZE RANGE (cm)
	1	2	3	4						
* Rainbow trout	1	-	-	-	1	-	2	1	-	27.8
Longnose sucker	2	-	-	-	-	-	2	-	-	11.0
Coarse sucker	11	-	-	-	-	-	11	-	-	9.5 - 9.9
Redside shiner	7	-	-	-	-	-	7	-	-	8.3 - 8.9

* The netted rainbow trout escaped, but was approximately the same size as the angled one.

Minnow Traps:

BAIT: Sardines

#	HOURS	DEPTH (m)	SUBSTRATE	SPECIES	SIZE RANGE (cm)
1	19.50	1.0	organics	1 burbot 7 peamouth chub 18 redside shiner	20.3 average 5.3 average 6.3
2	19.25	1.0	organics	2 prickly sculpin 11 peamouth chub 7 redside shiner	average 8.5 average 6.1 average 6.3

Comments:

The burbot in minnow trap #1 weighed 50.0 g.
Some redside shiners had adult tapeworms in the body cavity.

Lake: **SABAI**

INDIVIDUAL FISH DATA

Date Captured: June 1, 1990

Method of Capture: Angling

M -Male
F -Female
? -Not Obvious

IMM - Immature
MG -Maturing
MT -Mature
GV -Gravid
SP -Spent
? -Not Obvious

EG -Egg
FR -Fin Ray
HD -Head
ML -Milt
OT -Otolith

SC -Scale
ST -Stomach
TG - Fish Tag
WF -Whole Fish

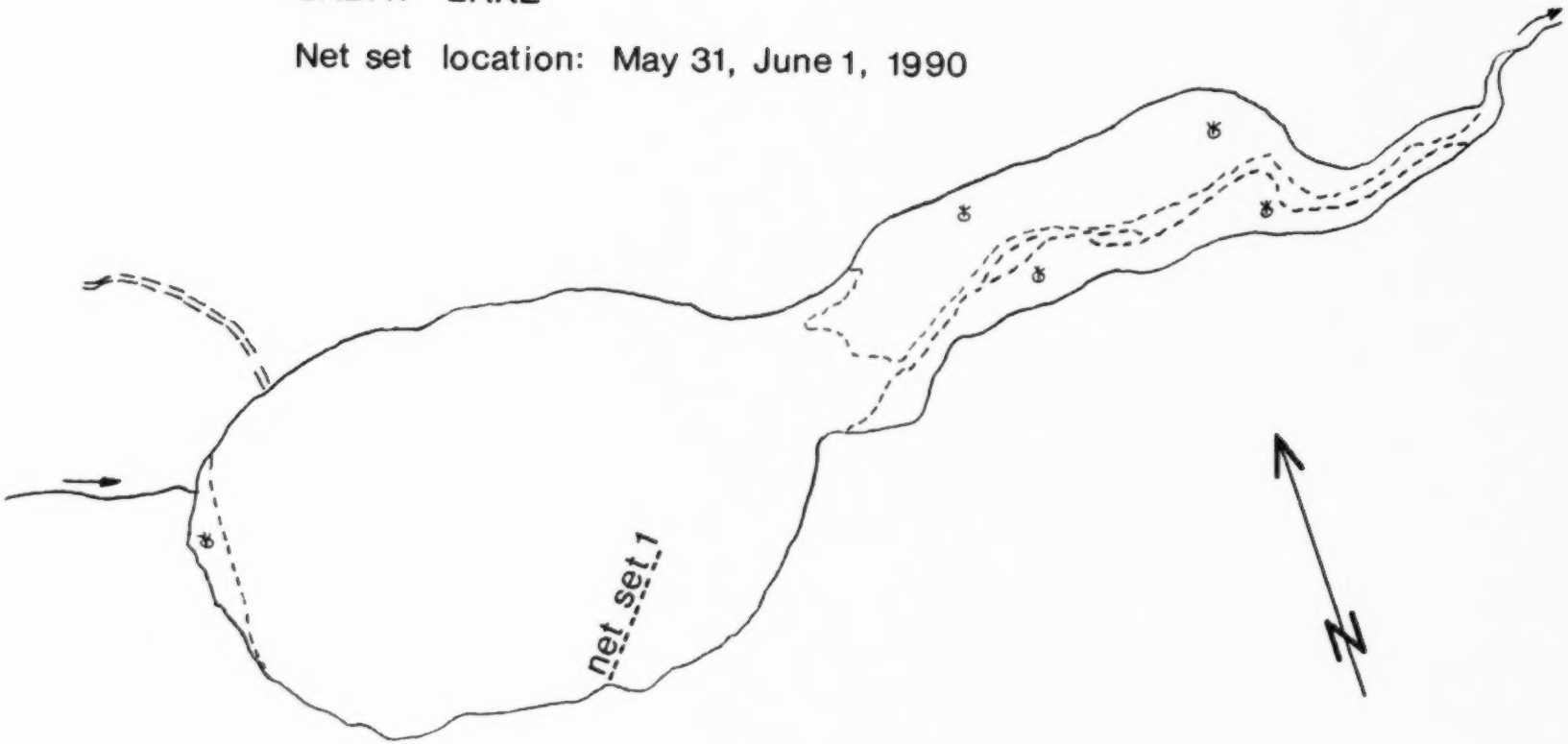
Species	Fork Length (cm)	Weight	Sex	Gonadal maturity	Sample Type	Age (yr)	Plankton	Stomach Contents Insects	Fish	Other	Comments
Rainbow	27.8	230	M	MG	M	3		insect larvae, beetle			angler caught

Age determination completed under contract by:

Margaret McDonald
Box 243
Midway, B.C.
VOH 1MO

SABAI LAKE

Net set location: May 31, June 1, 1990



Lake: **SABAI**

PHOTOGRAPH DIRECTORY

Negative #	Plate #	Description
R2:14	1	View of outlet looking downstream, approximately 150 m downstream from lake. The outlet to this point from the lake is a series of beaver dams and resulting ponds, with no fisheries enhancement potential.
R2:15	2	View across outlet at beaver pond and drowned trees, approximately 150 m downstream from lake.
R2:12	3	View of inlet looking upstream from sample site #1, located 250 m upstream from lake. Photo taken May 31, 1990.
R2:13	4	View of inlet looking downstream from sample site #1, located 250 m upstream from lake. Photo taken May 31, 1990.
R5:22	5	View of inlet looking upstream from sample site #1, located 250 m upstream from lake. Photo taken August 24, 1990.

Lake: **SABAI**

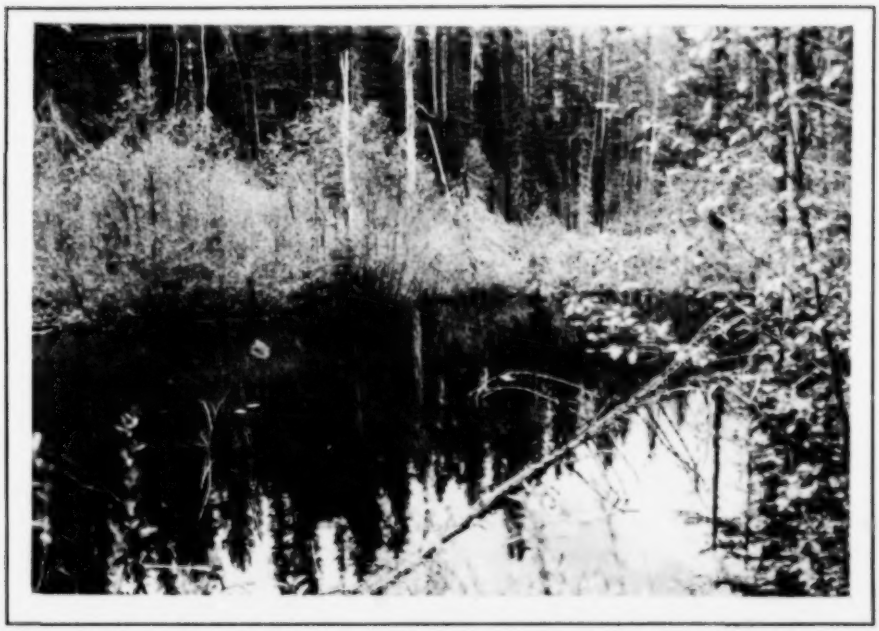


Plate 1: View of outlet looking downstream, approximately 150 m downstream from lake. The outlet to this point from the lake is a series of beaver dams and resulting ponds, with no fisheries enhancement potential.

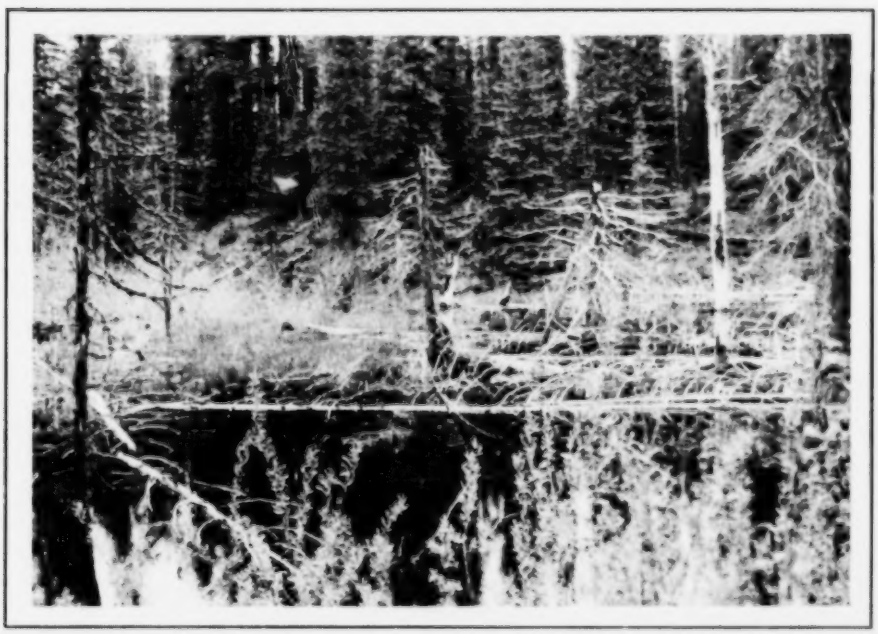


Plate 2: View across outlet at beaver pond and drowned trees, approximately 150 m downstream from lake.

Lake: **SABAI**

Plate 3:
View of inlet looking upstream from sample site #1, located 250 m upstream from lake. Photo taken May 31, 1990.

Plate 4:
View of inlet looking downstream from sample site #1, located 250 m upstream from lake. Photo taken May 31, 1990.

Lake: **SABAI**

Plate 5:
View of inlet looking upstream from sample site #1, located 250 m upstream from lake. Photo taken August 24, 1990.

Lake: SABAI

Appendix A

TRIBUTARY STREAM DATA

Lake: **SABAI**

System Name: **unnamed c.** **inlet**

System No.: **25-1200-020**

Site location: Sample Site #1, 250 m upstream from lake.

Date:	May 31, 1990	Time:	1540 hrs
Channel Width:	12.0 m	Water Temp.:	13.0°C
Wetted Width:	0.9 m	Stage (flow):	high
Max. Depth:	0.3 m	Velocity:	0.14 m/sec
Avg. Depth:	0.2 m	Field Gradient:	1.5%
Turbidity:	0.3 m	Colour:	tannic

Flood Signs:
Height: --
Type: --

Substrate Breakdown:

Fines	Small Gravel	Large Gravel	Cobble
40%	60%	0%	0%

Boulder	Bedrock
0 %	0 %

Substrate Compaction: low Sand: 50 %

Banks:

	Form	Height	Stability
Right	steep	12 cm	stable
Left	undercut	8 cm	stable

Comments:

- Limited spawning habitat due to high percentage of fines.
- Some rearing with LOD and undercut banks providing cover.
- This is a very small creek.
- Heavy rain the last 2 days.